

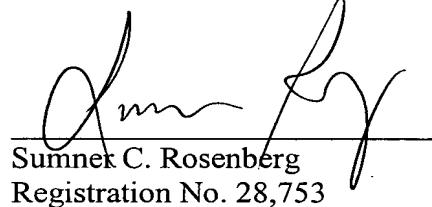
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International Application No. PCT/EP2003/007997**

**Remarks**

The specification is amended herein to update the priority claim for this application and to include the abstract as a separate sheet in accordance with 37 CFR 1.72. The claims have been amended to delete instances of multiple dependencies. No new matter is believed to be added.

Respectfully submitted,

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Michael Laird



1/21/05  
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**ABSTRACT**

The invention provides a method and apparatus for monitoring subsurface chromium depletion from a steel member, such as a pyrolysis pipe. In the harsh conditions of a pyrolysis furnace, chromium within the pipe 16 migrates towards the pipe surface which results in the formation of a chromium depleted layer 14. This layer can provide useful data about the condition and operation of the furnace. The degree of chromium depletion is measured by using a magnetic source of known strength to create a magnetic field in the surface region of the pipe 16. An estimate of the thickness of the chromium depleted layer 14 is determined from the resultant magnetic flux, which can be measured by a hall element arranged at substantially 45° to the longitudinal axis of the magnet.